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No. II.

CENTRO-LINEAD.

The LARGE SILVER MEDAL was presented to Mr. M. H. SHUTTLEWORTH, Chapel Street, Poultry, for his Centro-linead, or Instrument for Drawing Lines towards an Inaccessible Point. One of the Instruments has been placed in the Society's Repository.

SIR,

I BEG leave to lay before the Society an Instrument for Drawing Lines to an Inaccessible Point.

Having seen an instrument invented by Mr. Farey for a similar purpose, it appeared to me that greater advantages might be obtained by simplifying its form; in particular, all the present instruments require altering to adjust them to different sides of the drawing, whereas mine is equally applicable to both the vanishing points, and possessing, in addition, the properties of a T square, forms an instrument by which an artist may describe all the straight lines, in whatever direction, which are necessary to the completion of a perspective drawing.

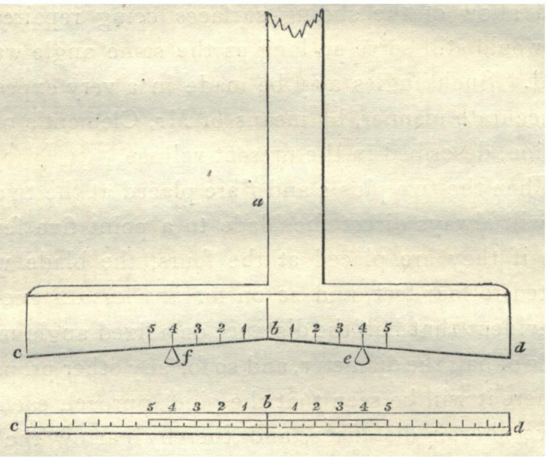
This, with other advantages, I considered of sufficient importance to induce me to lay it before the Society, with the idea that it may in a measure forward the interests of science.

I am, Sir, &c. &c.
M. H. SHUTTLEWORTH.

A. AIKIN, Esq.
Secretary, &c. &c.

The Centro-linead is now a well-known instrument; it was invented by Mr. Peter Nicholson above twenty years ago, and is described in the Society's 33d volume:

yet, to the present time, it does not appear to have occurred to any one before Mr. Shuttleworth, that fixed angles, with divisions on the sliding limbs, could be more readily applied than the instrument hitherto in use with adjusting angles.



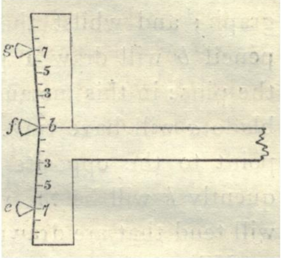
The improvement, therefore, consists in using T squares, with longer stocks than usual, sufficiently wide to receive at their backs the required angles, with divisions on each limb to shew at what place the guide pins must be put for any given distance of the vanishing point ; and as these instruments can rarely be wanted for very near points, the angle given to the first, differing about $7\frac{1}{2}^{\circ}$ from a right line ($172\frac{1}{2}^{\circ}$), enables it to extend to five feet and any less distance ; the second differing but half as much, or $3\frac{3}{4}^{\circ}$, will extend to ten feet ; and a third or fourth differing still less from a right line, to any other required distance. They are formed thus : *a* is the ruling blade, *b* is the angle, and *b c b d* the sliding limbs, *e f* the two pins against which they slide. The lower figure is the face of the limbs, to shew their divisions : these divisions indicate feet, and are subdivided into inches :

as the marking these divisions impairs the surface, they should occupy but a narrow space along the middle, in order to leave a clear surface to slide against the pins; but it may be preferable to divide the upper and under surfaces, as indicated in the first figure; for then they would allow of the sliding surfaces being repaired, and they would still serve so long as the same angle was preserved. Such angles may be made in a very expeditious and accurate manner, by means of Mr. Clement's planing machine, described in the present volume.

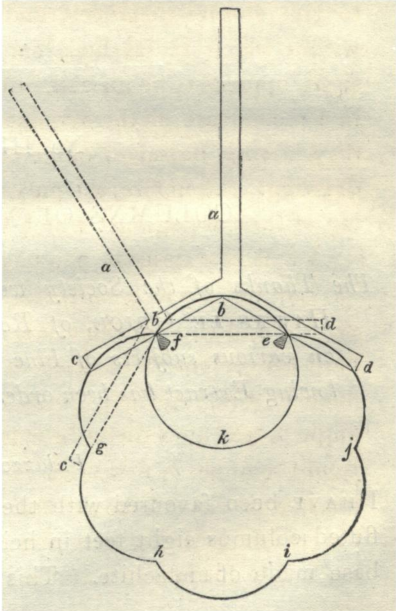
When the two pins *e* and *f* are placed at the two fives, they will always direct the blade to a point five feet distant; if they are placed at the fours, the blade will be directed to four feet, and so on for any less distance; for it is evident that half the distance on a fixed angle must fit a circle of half the diameter, and so for any other proportion. But here it will be seen that the pins approach each other to give shorter distances, and thereby narrow the space within which radial lines can be drawn. This, at first sight, appears to be an evil, but it is not so, for here comes in a second use of the divisions, by which the instrument may at once be set to range over the whole surface of the drawing. Therefore, the only fault remaining is a lessening of the base against which the blade is steadied.

I will now describe the mode of setting it.

Lay the blade *a* correctly to the horizontal or other vanishing line, with the stock *c d* on the part of the board most convenient for sticking in the pins; then, at whatever distance the vanishing point is required to be from the angle *b*, read that distance among the divisions both ways from the angle *b*, and stick in the pins correctly to them: the instrument is then set and ready for use. But suppose the range between two pins is not sufficient, slide the angle *b* to that pin where the increase is wanted—suppose it is the pin *f*; then notice at what number the pin *e* stands, and place a third pin *g* at the opposite corresponding number; this will give a second portion of range, and this process may be repeated with a fourth or more pins, whereby the most ample range may be obtained.



For setting the instrument as above stated, divisions are only needed half the length of the limbs *c* and *d*; but for increasing the range they may be wanted the whole length, and also for setting it at first with a double range, for then one pin may be put on the horizontal line, and the angle *b* brought to it, with the blade correct to the line; then if four feet distance was wanted, place a second pin at 8 on one limb, and a third pin at 8 on the other limb; then an equal range above and below the horizon will be given.



To shew those who may not have attended to the subject what takes place when an increase of range is made, the following diagram is added, on which every thing is caricatured to make it conspicuous: it is so arranged that six pins will enable the instrument to go quite round the centre. The sliding limbs *c d*, with a pencil at their angle *b*, form the well-known instrument called an arcograph; and whilst they slide against the pins *e f*, the pencil *b* will draw a portion of the circle *b k* between the pins: in this instance the portion will be 120°, yet the blade *a* will have traversed only 60°, for it will constantly point to the opposite diameter *k* of that circle, consequently *k* will be the vanishing point, to which all lines will tend that are drawn by the blade *a*.

When the angle *b* comes to the pin *f*, as shewn by dotted lines, the end *c* will be at *g*, where a pin is to be put in exactly as far from *f* as *f* is from *e*; then the pencil at *b* will describe another portion 120° of a second circle, whose opposite diameter will still be at *k*, and the blade *a* will traverse another 60°, still pointing to *k*; when the angle *b* has come to *g*, another pin *h* may be put in, and so on at *i* and *j*, when the pencil at *b* will describe the six segments whose opposite diameters will all be at *k*, and to which the blade *a* will always point.

No. III.

COLUMNS OF MALACHITE.

The Thanks of the Society were voted to the COUNT HAWKS LE GRICE, *of Rome, for a communication on various subjects of Fine Art; from which the following Extract has been ordered to be published.*

Palazzo Puliani, 4th June, 1831.

I HAVE been favoured with the sight of two Corinthian fluted columns eight feet in height, with the capital and base made of malachite. This unique work of art was